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Statement of

The Under Secretary of Defense for Acquisition and Technology
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Before the
Research and Development Subcommittee
of the House Committee on National Security

on

The FY 1996 DOD RDT&E Program

March 28, 1995

Mr. Chairman, Members of the Subcommittee, and staff, thank you for the opportunity to appear before you today to discuss the specifics of the Department of Defense Research, Development, Test & Evaluation (RDT&E) programs and how they support the Department's overall modernization plans and the war fighter's needs.

Mr. Chairman, you may have heard of the Department's studies of a "Revolution in Military Affairs" or RMA. The revolution derives not from a single innovation or idea but from a fundamental change in the way America fights. The revolution is driven by making full use of a wide range of new technology involving sensors, computers, low observables, precision guided munitions and telecommunications.

Today, I describe a vision of a second but related revolution -- a "Revolution in Military Acquisition Affairs" -- or RMA^2. This revolution will change the way America develops and fields weapon systems. Like the first revolution, this second revolution is driven by capturing the synergism derived from the integration of multiple thrusts. In particular, we are making progress on three fronts: increasing our focus on life cycle cost reduction; making better use of the national industrial base; and implementing acquisition process improvements.

REDUCING LIFE CYCLE COST

The first component of this revolution is the Department's increased focus on life cycle cost reduction. The Department is shifting away from a world where performance is the only consideration and towards a more balanced "cost of performance" view. I am pleased to report that weapon system life cycle cost is being treated as an <u>independent</u> variable, not simply as a fall-out <u>dependent</u> variable.

As the Department's senior acquisition executive, I chair the Defense Acquisition Board (DAB) along with Admiral Owens who, as Vice Chairman of the Joint Chiefs of Staff, wears another hat as chairman of the Joint Requirements Oversight Council (JROC). Together, we have created a strong imperative throughout the Department to do the up front trades; assess the incremental cost of driving requirements; and find the knee of the cost-performance curve(s). Our objective is to insure that the Department's modernization and recapitalization plan continues to be built on a solid foundation of timely and explicit affordability decisions.

Our attention is not focused solely on the initial acquisition cost. We are concerned with overall <u>life cycle</u> cost. This emphasis is driven by the fact that 60-70% of most weapon system's costs are incurred subsequent to initial deployment of the system. To the extent the Department maintains systems longer, life cycle cost becomes a more important consideration. The message here is that "back end" sustainment costs are receiving more "up front" design attention. Where it makes sense, the Department will invest in reliability upgrades to reduce the ownership costs for existing systems. For new or existing systems, the payoff associated with these life cycle cost initiatives -- in terms of savings to the Department's budget bottom line -- will not be realized over the near term, but over the long term.

The Department's Science and Technology (S&T) program, funded through budget categories 6.1/6.2/6.3, supports life cycle cost reduction for new and existing systems through investments in a

6.1/6.2/6.3, supports life cycle cost reduction for new and existing systems through investments in a number of supporting technologies. Some of the Department's more prominent technology thrusts for affordability include: improved modeling and simulation; advanced manufacturing processes; and embedded corrosion and fracture sensors. These technology investments are essential to maintain effective and capable platforms over increasingly longer service lives. The Department's projected force structure and budget requirements are related to service life assumptions supported by this S&T base.

LEVERAGING THE NATIONAL INDUSTRIAL BASE

The second component of our revolution is leveraging the commercial industrial base. Over the past 30 years, the evolutionary change in the industrial base that supports DOD is no less dramatic than the changes in the world order since the end of the cold war. While DOD purchases have declined, America's commercial markets have continued to expand. The rapid growth of the commercial industrial sector, driven by a commercial market flourishing quite independently of DOD, has reduced the once central role of defense spending as a driving force for innovation.

In aggregate terms, commercial industry surpassed the DOD in R&D spending back in 1965. The disparity between the DOD and commercial sector investment in R&D has been growing wider ever since. This difference means that relatively more of this nation's technological momentum will be based on what's coming out of essentially commercial enterprises.

The bottom line is that we have no choice but to move from separate industrial sectors for defense and commercial markets to an integrated national industrial base. Leveraging commercial technological advances to create military advantage is critical to ensuring that our equipment remains the most advanced in the world. The objective is to marry the momentum of a vigorous, productive, and competitive commercial industrial infrastructure with the unique technologies and systems integration capabilities provided by our defense contractors.

The Department's dual use investment strategy is documented in a February 1995 DOD report entitled *Dual Use Technology: A Defense Strategy for Affordable, Leading-Edge Technology*. This strategy builds on the Department's efforts to improve the defense acquisition process. Improved procurement business practices are the foundation for our efforts to establish an integrated defense-commercial industrial base. The Department's dual use strategy contains three main pillars:

- Invest in dual use technologies critical to military applications;
- Integrate military and commercial production;
- Insert commercial components into military systems.

The first pillar involves leveraging the commercial sector's technology base investment. Commercial industry is now the technological agent of change in information systems, telecommunications and micro-electronics. The Department's dual use technology program is tailored to leverage off the commercial technology base so that the taxpayer does not have to pay for the entire technology investment.

The second pillar is the "dual produce" concept. The Department is putting a great deal of emphasis on taking advantage of commercial production to manufacture defense equipment. Producing major weapon system platforms on a commercial line will be more the exception than the rule. However, there is great potential for doing this at the subsystem and critical component level of assembly.

The third piece of the strategy calls for DOD to make those investments that are needed to facilitate use of commercial components in defense systems. The objective is to have components "designed for dual use." This pillar recognizes that acquisition reform and dual use technology investments are not, by themselves, sufficient to ensure use of commercial components. Program managers and contractors still face up-front costs and risks in adopting commercial products and technologies -- for example, the cost of determining that a commercial integrated circuit will withstand the necessary extremes of temperature and humidity, or the cost of engineering a commercial component to fit an existing military system.

and humidity, or the cost of engineering a commercial component to fit an existing military system. Where it makes sense, DOD must offset those costs and risks at a level of organization that shares rather than duplicates common costs.

Through initiatives like the Technology Reinvestment Project (TRP), the Department is placing greater reliance on commercial sources to make DOD's weapon systems more affordable. A good example is the Department's investment in an electronic packaging technique -- it is called Multi-Chip Modules or MCMs. DOD was the early leader in advancing this technology. In 1990 and 1991, there was virtually no commercial market. The Department's current projections are that the market demand for MCMs will grow to several hundred millions of dollars by the turn of the century. This growth is driven by the demand of the commercial telecommunications and computer industry. Today, over half of MCM sales are for commercial applications. And by the turn of the century, the DOD percentage of that market will drop to about ten percent of the total. As a result, the Department is able to buy off commercial MCM lines and capture savings in the prices DOD pays. I have no reason to invest in development of a commercial capability if the DOD is not planning to buy off that commercial line to generate a net savings for the Department of Defense.

Mr. Chairman, I have been in my job now about five months. So, the TRP was not really invented on my watch. But I must say, that if it did not exist today, the TRP would be precisely the type of program I would be trying to establish to support this underlying strategy.

I am absolutely convinced that the benefits of a better leveraged industrial base are not only reduced cost, but shortened acquisition cycle times as well. The Department of Defense can not afford a 15-year acquisition cycle time when the comparable commercial turnover is every 3-4 years. The issue is not only cost. The lives of our soldiers, sailors, marines and airmen may depend upon shortened acquisition cycle times as well. In a global market, everyone, including our potential adversaries, will gain increasing access to the same commercial technology base. The military advantage goes to the nation who has the best cycle time to capture technologies that are commercially available; incorporate them in weapon systems; and get them fielded first.

IMPROVING THE ACQUISITION PROCESS

The real center of gravity for the revolution is an improved acquisition process. Progress along this front makes us more efficient; enables the DOD to purchase off commercial lines; and allows us to buy more with less. To make the system truly responsive, we must "un-learn" some of the accumulated collective behaviors we have "learned" over the years. My immediate goal is to create a climate of reasoned, well informed risk-taking by our program executive officers and system program directors. I solicit your support to help me shift from an environment of regulation and enforcement to one of incentivized performance.

MODERNIZATION AND RECAPITALIZATION

Reduced costs and shortened lead times are the principal benefits of the "Revolution in Military Acquisition Affairs." This revolution supports the Department's long term financial plan. It will determine, to a large extent, what the DOD will spend on RDT&E, procurement, operations and maintenance over the Future Years Defense Program (FYDP) and beyond.

In the short term, Secretary Perry made the conscious decision to bring our total budget and force structure down while maintaining the high state of readiness needed to support increased operational tempos. During this transient period, the focus of the Department's modernization effort has been on those force enhancements essential to meeting the demands of this strategy. Science and technology (S&T) efforts have been sustained, but overall procurement spending has been reduced to approximately 35 percent of the 1985 peak level. These actions are prudent in the near term, because past investments are adequate to sustain a force as it is being downsized.

Our current level of investment -- it is a little over $39B in procurement and about $34B in RDT&E in our FY96 budget submission -- will not sustain the Bottom Up Review (BUR) force over the long term. During the period of the current FY96-01 Future Years Defense Program (FYDP), the Department's

During the period of the current FY96-01 Future Years Defense Program (FYDP), the Department's investment focus must transition to a broad modernization and recapitalization effort. Budget authority for procurement in FY 2001 is projected to be 47 percent higher than in FY 1996. The objective of this effort will be to systematically upgrade and replace portions of the Department's capital stock. It is important to stress that the Department does not need to implement a one-for-one platform replacement of all current inventories. The Department's modernization and recapitalization program will be executed by:

- Injecting new technologies through service life extensions and technological insertions to modernize existing platforms, systems, and supporting infrastructure;
- Introducing new systems and concepts that substantially upgrade U.S. war fighting capabilities;
- Replacing, on less than a one-for-one basis, older systems with incremental improvement in reliability, maintainability and performance.

My principal responsibility as the Under Secretary for Acquisition and Technology is to work closely with the JROC to insure the Department fields effective, technologically superior weapon systems at an affordable cost. The future readiness and effectiveness of U.S. forces will be determined by today's investment in a relevant technology base, creation of suitable "technology ramps," and initiation of a sustainable procurement program.

AIR WARFARE

In the realm of Air Warfare, the Department is continuing to size and refine its capability to meet the requirements of two nearly simultaneous major regional conflict as well as provide overseas presence. Acquisition programs to support these objectives include fielding 20 B-2 bombers with improved conventional attack capabilities and development of the Air Force F-22 fighter and Navy/Marine Corps F/A-18 E/F fighter/attack aircraft. For the longer term, efforts will focus on defining the family of aircraft that will evolve from the Joint Advanced Strike Technology program.

Improvements are also being made in the air-to-air- and air-to-ground weapons carried by combat aircraft. Future air-to-air weapons will include enhanced versions of both the AMRAAM and the Sidewinder. New air-to-ground weapons with increased standoff range and improved all weather accuracy will provide significant benefits in future combat operations.

Aerial refueling is critical to the effective employment of aviation forces. Aerial refueling aircraft for in-theater employment include Air Force long-range tankers as well as Navy and Marine Corps tactical aircraft. Additionally, a portion of the Air Force KC-10 and KC-135 fleet is being modified with multipoint refueling capability to increase the Air Force ability to refuel Navy, Marine Corps and allied aircraft in flight.

Mobility enhancements in airlift are another critical element in overall capability. Airlift investments in the coming years will focus on replacing the aging fleet of C-141 intertheater airlift. The C-17 procurement is one element. A review by the Defense Acquisition Board will examine the results of both the C-17 program and the NDAA competition. Through this approach, the Department expects to reach a decision on the most cost-effective mix of airlift aircraft for meeting future needs. Enhancements in intratheater capability will come with the introduction later in this decade of the new J version of the C-130 tactical transport.

F-22

The F-22 is our next generation air superiority fighter aircraft that will replace the F-15. The F-22 will ensure U.S. dominance in the air, and pose a powerful deterrent to aggression. With the downsizing of U.S. military force structure, it will be critical for our forces to pack a more lethal punch into a smaller package. Air superiority will continue to be a prerequisite for success in all other military operations. The F-22's incorporation of stealth, supercruise, agility, and advanced avionics, combined with the

superior skills of our pilots, will permit U.S. aircraft to achieve first-look, first-shot, and first-kill. This dominance in the air will allow our air, ground, and naval combat commanders the freedom to engage the enemy at the time and place of our choosing.

The F-22 also possesses significant ground attack capabilities that will permit the joint force commander to employ the aircraft against a wide variety of targets.

The combination of capabilities embodied in the F-22 will allow the conduct of air superiority more efficiently, with greater assurance, and with substantially fewer losses than with current systems. Our dominance in the air is being challenged by the emergence of foreign capabilities. Many foreign aircraft systems are at parity with the F-15, and the F-15 is vulnerable to some surface-to-air missiles which are possessed by potential enemies.

The F-22 successfully conducted a competitive demonstration/validation program in the 1986-1991 time period. Approval to enter the engineering and manufacturing development (EMD) phase was granted in August 1991. The EMD program is progressing quite well. As with all development programs some technical and fiscal challenges have arisen. However, the difficulties thus far have been relatively minor compared to prior fighter developments. This may be due in part to the integrated product team approach being employed by the service and the contractors on the program. The engine, air vehicle weight, and radar signature efforts have been the most challenging thus far.

At the request of the Congress, the Department recently concluded an independent Defense Science Board (DSB) review of the concurrency and risk in the F-22 program. The DSB concluded that the program has acceptable concurrency, and the risks associated with entry into rate production are readily controllable through monitoring and enforcement of the key demonstration tests incorporated in the program plan. The air vehicle Critical Design Review was completed on time last month, and there were only twelve open items that needed to be brought to closure prior to release of all final drawings for the fabrication of the development flight test aircraft. These open issues are expected to be resolved by June 1995. This is outstanding for a program this large and complex.

Joint Primary Aircraft Training System (JPATS)

JPATS is the key to implementing joint fixed wing pilot training for the Navy and Air Force, as directed by the Secretary of Defense. JPATS includes aircraft, a ground based training system, and contractor logistics support. The JPATS aircraft will replace the aging Air Force T-37 and the Navy T-34C primary trainers, both of which have significant performance and supportability deficiencies. JPATS will offer greater pilot safety, as well as greatly increase accommodation of women in primary trainer cockpits. The Air Force plans to acquire 372 aircraft and the Navy will acquire 339. Initial Operational Capability for the Air Force is planned for FY01, with the Navy to follow in FY03. JPATS is a DOD Acquisition Pilot Program currently in source selection. The successful offeror will be announced in June 1995, with contract award in August 1995.

Joint Surveillance Target Attack Radar System (JSTARS)

JSTARS is a joint Army and Air Force program, with the Air Force as the lead service. Its purpose is to field a common battle management and targeting capability to detect, locate, classify, and track moving and stationary targets for situation assessment to avoid surprise and to attack targets out to the range of existing and developing weapons. The joint Army/Air Force objective is to develop a radar, airborne battle management workstations, airframe, data link, and ground stations that will provide the capability to locate, track, and classify tracked and wheeled vehicles beyond ground line-of-sight during the day and night and under most weather conditions. Radar data are distributed to the ground station modules

(GSMs) via a secure surveillance and control data link.

The Air Force is developing and producing the air component of JSTARS (E-8C) while the Army is developing and producing the GSMs. The E-8C aircraft is in its third year of low-rate production of two per year, with a total inventory objective of 19 aircraft and total program cost of $8.6B. The Army's low-rate production program is also in its third year and includes the 12 medium GSMs mounted on five-ton trucks and light GSMs mounted on HMMWVs. Total Army program cost is $1.6B with total inventory objective of 104 GSMs. The low-rate production program is planned to continue in FY 1996 while the joint multi-service operational test and evaluation is completed. IOC is slated for March 1997.

JSTARS flight test aircraft were successfully employed in Desert Storm and flew numerous demonstration missions in Europe last year during the EUROSTAR demonstrations. We are actively engaged in discussions with NATO allies regarding the potential purchase of JSTARS to complement the NATO AWACS capability. The NATO Military Committee endorsed the requirement for an Alliance Ground Surveillance capability, and NATO established a small, full-time project office in Brussels. In the next 6-18 months, we are working toward agreement for a NATO-owned, jointly operated system with JSTARS as the core candidate.

F-18E/F Hornet

The F-18 E/F program is the key to the near-term modernization of Naval Aviation, providing significant enhancements to the combat proven F-18 C/D. The E/F will provide greater range, loiter, weapons carriage, carrier operational suitability, and survivability. In addition, it will arrive with significant future growth potential designed in. The C/D models, in contrast, are now at their maximum capacity for avionics cooling, electrical power, and weight.

This program is in Engineering and Manufacturing Development, with the first developmental airframes currently under construction. In accordance with the RDT&E cap of $4.8 billion imposed by the Congress, the program is fully funded and on schedule for IOC in 1998. The final C/D procurement will be in 1996, with all future Hornet procurement planned for the E/F. The E/F passed its critical design review in June of this year, and is on schedule for first flight at the end of 1995.

F-14 Upgrade

The current F-14 program consists of a modest upgrade of strike capability for 251 airplanes. Identified as F-14 Precision Strike Upgrade, it builds upon the survivability and service life investments currently underway. The Precision Strike Upgrade program will enhance the striking power of the F-14 fleet, which at present has daylight, iron-bomb capability only. It will provide 14 additional PGM capable multi-role fighters to each carrier air wing. This enhancement is especially important as the A-6 fleet retirement is completed in 1997. With the F-14 day and night precision strike capable, each wing will have 50 multi-role aircraft for its power projection role, 36 F/A-18 Hornets and 14 F-14 Tomcats. This multi-role capability is particularly valuable for the carrier forces, where limited real estate on the flight and hangar decks argues persuasively for an on-call contribution of both air-to-air and air-to-ground effectiveness from every possible platform.

A Cost and Operational Effectiveness Analysis was recently completed on options for achieving the desired F-14 enhancements. A Navy decision defining the new configuration is planned for June 1995. Both a JDAM-only configuration and a FLIR/Laser Targeting Pod capability are under consideration. Preliminary estimates indicate that this program can be accomplished at a total cost of less than $300 million, with IOC in FY 2000. The funds requested in the 1996 budget include $25.4 million for development.

Tomahawk Cruise Missile

Tomahawk is capable of autonomous precision strikes deep into unfriendly territory, as well as sustained salvos in combat. Each succeeding improvement expands the target base for this weapon and our ability to strike at the heart of an enemy's capacity to sustain combat, with the obvious effect of reducing the potential for loss of air crews over hostile territory.

In 1995, we will make an incremental improvement to the weapon system with the introduction of the Tomahawk Precision Strike Initiative. In 1994, we began an Engineering and Manufacturing Development (EMD) contract for the Tomahawk Baseline Improvement Program (TBIP) development, which will give Tomahawk increased accuracy and reliability, with reduced collateral damage by the year 2000.

The introduction of the Afloat Planning System, Theater Mission Planning Center Upgrade, and the Advanced Tomahawk Weapon Control System all serve to make Tomahawk a quick-reaction, tactical-strike weapon. RDT&E funding in FY96 of $146.6M supports the TBIP program EMD. In production, we have singled up Tomahawk procurement to Hughes Missile Systems Company. This single-up acquisition strategy resulted in FY 1994-1999 procurement savings of over $500 million. The FY 1996 request of $162M is for 164 Tomahawk conventional Block III missiles.

LAND WARFARE

Comanche

In December 1994, the Department decided to restructure Comanche and defer production. The Army responded to that decision by proposing a program that included two prototypes and six additional Early Operational Capability aircraft for user evaluation. The program puts aircraft in the hands of soldiers toward the end of the century. This concept gets real world experience fed back into the aircraft developmental process. This concept was made possible by deferring weapon systems integration. The six aircraft will have key technologies such as a second-generation Forward Looking Infrared device, advanced aided target detection, and low observables, which are critical to accomplishment of the Comanche's primary reconnaissance mission.

I support the Army's approach which will assess Comanche's potential benefit to the Army as well as broader applications in the joint arena. Last week, I approved the Army's restructured approach and all FY 95 funding has now been released to the Army to execute the restructured program.

Advanced Field Artillery System (AFAS)/Future Armored Resupply Vehicle (FARV)

Crusader, formerly called Advanced Field Artillery System (AFAS) and Future Armored Resupply Vehicle (FARV), is the Army's next generation indirect fire cannon and artillery resupply system for the heavy force. This system will provide an overmatching firepower capability which will support the force commander's goal of dominating the maneuver battle and protecting the force. Crusader will incorporate advanced technologies to increase accuracy, rate of fire, survivability, mobility, and ammunition handling speed; and to decrease crew size. When fielded, Crusader will displace the M109A6 Paladin Self-Propelled Howitzer and M992 Field Artillery Ammunition Supply Vehicle in Rapidly Deployable and Forward Deployed Forces.

The self-propelled howitzer (SPH) will improve the range of 155mm cannon artillery to 40 kilometers unassisted and 50 kilometers with assisted projectiles. It will increase the current burst rate fire from four rounds per minute to 10-12 rounds per minute. It will increase the payload, and improve accuracy, survivability and reliability, availability, and maintainability over current howitzer systems while reducing the overall howitzer section size from 4 to 3. SPH will be capable of cross-country and highway speeds equal to the mobility of the supported M1 and M2 force. SPH will incorporate an automatic ammunition-handling system and a new regenerative liquid propellant gun to achieve the longer ranges and higher rates of fire.

The resupply vehicle (RSV) is the companion ammunition resupply vehicle to SPH and will resupply ammunition and fuel for SPH. Inserting high-payoff technologies in robotics, automation, expert

systems, vetronics, and improved ammunition propulsion into the resupply process, the FARV will provide the necessary ammunition to meet the expected firing rates, meet the goals for autonomous operations, and capitalize on cost and operational advantages of component commonalty. RSV will have an ammunition capacity between 130 and 200 rounds, and will be capable of automated rearming and refueling operations, protected under armor. This automation will enable the crew size to be reduced from 5 to 3.

I have approved Crusader's entry into the Demonstration/Validation phase of development as a single program. The Army awarded a letter contract to United Defense Limited Partnership on December 29, 1994.

Combat Vehicle Improvement Program

In response to deficiencies highlighted during Operation Desert Storm and projected increases in regional threats, the CVIP provides continued modernization of the Army combat vehicles. Improvements to the firepower, mobility, fightability and survivability of combat vehicles continue to be required. A key thrust of the CVIP is "Horizontal Technology Integration" (HTI) wherein common technologies are integrated across the various types of combat vehicles rather than developed as unique, stovepipe solutions.

One example of HTI is the 2nd Generation Forward Looking Infrared (2nd Gen FLIR) program. For 2nd Gen FLIR, a common detector will be integrated into the sights of the M1A2 tank (two sights), M2A3 Bradley (two sights), and the Armored Gun System (AGS) (one sight). Development of the common components, integration of the components into the vehicles, and testing will occur from present through FY98. Production cut-in is planned for FY98, and First Unit Equipped dates are FY00 for Abrams, FY00 for Bradley, and FY01 for AGS.

Digital Command and Control improvements will also be developed for the M2A3 Bradley and the M1A2 Abrams tank. These improvements, will also be fielded in FY00.

The development of the M88A2 Improved Recovery Vehicle and the Bradley Fire Support Team Vehicle (FISTV) correct two critical deficiencies identified during Operation Desert Storm -- inadequate recovery capability and inability of the M113 FISTV to keep up with the Abrams and Bradley maneuver forces. The M88A2 Milestone III is scheduled for 4Q96, and the Bradley FISTV Milestone III is scheduled for FY00.

Multiple Launch Rocket System Improvement Program

The primary missions of the Multiple Launch Rocket System (MLRS) are counterfire and suppression of enemy air defenses, light materiel and personnel targets. The MLRS is a free-flight area fire, artillery rocket system which supplements cannon artillery fires by delivering large volumes of firepower in a short time against critical, time-sensitive targets. The MLRS M270 launcher is being upgraded to accommodate a new MLRS family of munitions (MFOM), including the Army Tactical Missile System.

MLRS performed extremely well in Operation Desert Storm (ODS) in which significant numbers of launchers were deployed. All operational requirement were met and, in most cases, exceeded levels for readiness, reliability and maintainability. MLRS units from the United Kingdom were also involved in ODS and proved the value of this multi-national system. The new upgrade MLRS (Deep Attack Launcher) also demonstrated its enormous capability during the first operational firings of the longer range ATACMS.

The Army has initiated an extensive improvements program to enhance MLRS's basic capability. The improvements are in three areas--an extended range rocket (from 32 kilometers to 50 kilometers), an improved fire control system, and an improved launcher mechanical system. The extended range rocket has a reduced payload of M77 submunitions and a longer rocket motor to enable attainment of the additional 18 kilometers of flight. The improved fire control system includes a meteorological sensor, a positioning navigation unit combined with global positioning system and a new launcher interface unit

with increased throughput capacities in the main and communication processors. The improved launcher mechanical systems consists of non-developmental item improvements to the elevation transmission, elevation motor, azimuth motor and motor control.

Army Tactical Missile System (ATACMS)

Deep attack systems provide the ground commander with an advanced, non-nuclear family of long range missiles and munitions to attack maneuver, command and control, and air defense assets, key logistic facilities, and surface-to-surface missile launchers. Deep artillery fires, rapidly shifted laterally or in depth, disrupt and destroy threat forces and long-range weapons before they influence the battle. The key component of the Army's deep attack capability is the Army Tactical Missile System (ATACMS) carrying either Anti-Personnel/Anti-Materiel (APAM) or BAT smart submunitions. The ATACMS fires from the Multiple Launch Rocket System (MLRS) M270 launchers.

ATACMS is the first modern conventional deep attack missile fielded since the introduction of Lance in 1972. The Block I variant attacks soft, stationary targets out to a range of 165 kilometers. In February 1993, the Army initiated a product improvement of the ATACMS Block I missile (designated Block IA). The improvement incorporates the Global Positioning System (GPS) and a lighter payload to extend the range of ATACMS to 300 kilometers with improved accuracy. In November 1993, the Army was directed to develop an alternative carrier for the BAT submunition in light of the termination of the Army's Tri-Service Standoff Attack Missile (TSSAM). The Army chose a variant (BlockII) of the ATACMS missile. ATACMS Block II incorporates 13 BAT (or P3I BAT) submunitions into the missile with a range of 140 kilometers.

V-22

The V-22 is a tilt-rotor aircraft designed to meet the amphibious/vertical assault needs of the Marine Corps, the Combat support and Combat Search and Rescue needs of the Navy, and the long-range infiltration and exfiltration missions of the United States Special Operations Command. The V-22 will be capable of flying over 2100 nautical miles with one aerial refueling, providing a vertical/short take-off aircraft that could rapidly self-deploy to any location in the world.

The Engineering and Manufacturing Demonstration contract was definitized in May 1994, and the V-22 completed the first Operational Assessment in July 1994. Last December, my office approved an acquisition strategy which includes initial production of both the Marine Corps variant (MV-22) and Special Operations Command variant (CV-22) and requested that the Defense Science Board (DSB) convene a Task Force to review cost-reduction strategies to lower unit cost. The DSB Task Force has completed its work and we are considering its recommendations.

NAVAL WARFARE

To ensure a capable and ready force for the future, the Department of the Navy is pursuing a recapitalization plan for the selective modernization of the fleet. Recapitalization aims to create an investment program in which sufficient new acquisitions are funded on a continuous basis to offset the capability lost through the disposal of older equipment. The initiatives planned will maintain a robust, albeit smaller, maritime force structure while hedging against uncertainties in the threat.

Examples include the construction of our first Flight IIA ARLEIGH BURKE-class guided-missile destroyer; construction of CVN 76, our tenth nuclear-propelled aircraft carrier; the Navy's Cooperative Engagement Capability, a program that the Secretary of Defense directed to be accelerated due to its critical role in joint battlespace situational awareness; introduction of the LPD-17 amphibious transport dock ship, programmed to begin in FY 98; increasing the Sealift and Maritime Prepositioning Force; the SEAWOLF-class submarine program, which will assure continued battlespace dominance well into the next century; and the New Attack Submarine, which will more affordably maintain that dominance.

Ship Self-Defense Program

The Ship Self-Defense (SSD) program gives non-AEGIS equipped ships the ability to operate safely in the littoral environment, defending themselves against attacks by aircraft and anti-ship cruise missiles, through the integration of existing and future sensors and self-defense weapon systems. The SSD program adds engagement, sensor, and electronic warfare systems and upgrades while exploiting capabilities of those systems already in the fleet.

The program has three coordinated efforts. First, procurement and installation of existing systems, including Close-In Weapons System (CIWS); RIM 7P surface-to-air missile; Rolling Airframe Missile and Infrared Mode Upgrade (IRMU); AN/SLQ-32 electronic warfare system; AN/SPS-49 radar; and signature reduction measures. Second, modular Local Area Network architecture for optimization of ship self-defense elements via multi-sensor integration, automated detect-to-engage, multi-weapon control, and hardkill/softkill integration. Third, development of advanced capabilities. New technology leveraging will include active phased arrays, missile guidance/fuzing/propulsion, and offboard active countermeasures. New systems will include Precision ESM, AN/SPQ-9B radar, Infrared Search and Track, Thermal Imaging Sensor System, Evolved Seasparrow, and CIWS upgrades.

C3I AND SPACE SYSTEMS

DOD is evolving from a cold war posture to a smaller, more mobile and more flexible force and infrastructure capable of projecting power anywhere in the world on short notice. At the same time, the Department is positioning itself to engage in a much broader spectrum of missions, ranging from deterrence and regional conflict to peacekeeping and humanitarian assistance. Command, Control, Communications, and Intelligence (C3I) systems are a vital element in successfully conducting the potential missions and operations of a post-cold war future.

Advances in technology and changes in military doctrine require that our C3I systems undergo continual modernization. Accordingly, modernization remains a priority for our C3I programs even under the fiscal constraints facing the Department. To this end we are continuing to move ahead with the modernization efforts needed to ensure our C3I systems provide the secure information capabilities needed by war fighters and other command authorities to effectively and successfully prosecute missions anywhere in the world. Specific examples include:

- improving the Airborne Warning and Control System (AWACS) in the areas of radar range and reliability, identification, communications, and navigation to help ensure that this vital platform will be fully responsive to future needs;

- continued fielding of Single Channel Ground and Airborne Radio System (SINCGARS) combat net radio to provide a secure, jam-resistant capability that is lacking with the current VHF radio system; and

- fielding of the Joint Tactical Information Distribution System (JTIDS) to provide a high capacity data communications capability to support defense against aircraft and tactical ballistic missiles.

The United States conducts a variety of activities in space in support of national security objectives. DOD space forces support a wide range of requirements critical to the National Command Authorities, combatant commanders, and operational forces. The global coverage, high readiness, non-intrusive forward presence, and responsiveness of space forces enable them to provide real-time and near-real-time support for the full range of military operations in peace, crisis, and across the entire spectrum of conflict.

Space forces are fundamental to modern military operations. They are playing a central role in the ongoing revolution in warfare because of their unique capabilities for gathering, processing, and disseminating information. In particular, space systems provide force multipliers that are increasingly important for sustaining an effective level of U.S. defense capability as overall force structure is downsized and restructured. The space modernization initiatives I will present to you today will help to ensure that DOD space forces will retain the capability and versatility to accomplish their missions effectively and efficiently in support of national security strategy and national military strategy.

Battlefield Combat Identification System (BCIS)

The Department has adopted a multifaceted strategy in response to the armor fratricide that was suffered in Operation Desert Storm. Simple devices, including flashing laser beacons and reflective panels, have already been purchased as a ÒQuick FixÓ for this problem. At the National Training Center, increasing emphasis is being placed on identification, which has resulted in significantly lower fratricide in exercises. Regarding more sophisticated materiel solutions, the Army tested a number of Òoff-the-shelfÓ systems in 1992 as candidates for near-term application and selected a millimeter-wave approach, which evolved into BCIS.

Initial development tests of the system show very good results in ground-to-ground applications. However, BCIS is not inexpensive, and before the Department commits to a large investment in the system, we intend to evaluate alternative approaches. A number of such concepts have been identified by the Combat Identification Task Force, which I established last year to study the overall issue of identification. We are considering a plan that would include an Advanced Concept Technology Demonstration (ACTD) on BCIS in early 1997, as well as advanced Technology Demonstrations (ATDs) of competing concepts in the same time-frame. Following these demonstrations, the Department will be in a position to make an informed decision on both the near-term and long-term approaches for this important requirement. At the same time, we will have kept the BCIS program moving so that we could procure the system quickly should events warrant.

Army Digitization of the Battlefield

The Army digitization effort is a vital part of the larger process of redesigning the Army to meet the challenges of the 21st century. This larger process, called Force XXI, focuses on the underlying concepts and design of the operational and institutional Army. The capabilities called for are tailored to allow the smaller force projection Army to more effectively and decisively concentrate battlefield combat power. The intent is to enable fewer and smaller contingency force units to be more lethal and survivable in an environment characterized by an accelerated operational tempo demanding instant communications and immediate response times. Fundamental capabilities required include automated, high-speed exchange of digitized information, fusion and display of intelligence data to commanders at all levels, rapid exchange of targeting data from sensors to shooters, and near-real-time picture of commanders' battlespace.

In order to achieve the benefits that digitization will bring to the battlefield, it is essential that all weapons systems be equipped with a digital capability. While some of the newer weapons systems have this capability, most do not. If the Army waits for the normal replacement of weapons systems to drive the introduction of digital capabilities across the force, it could not realistically be accomplished until well into the 21st century and at a potentially prohibitive cost. Since very few systems possess a digital capability now, the capability must be added as an Òappliqu Ó. In addition to the appliqu hardware, common application and support software (CASS) will be provided. The software will meet open systems standards and be non-proprietary except under the most compelling circumstances. It will be forward compatible with the mainstream of commercial hardware and software developments to allow ease of new technology insertion.

In the near and mid-term, a series of planned Advanced Technology Demonstrations (ATDs), Advanced Concept Technology Demonstrations (ACTDs), and Advanced War fighting Experiments (AWEs) will serve as the technical and doctrinal testing grounds for digitization.

AWACS Radar System Improvement Program (RSIP)

The RSIP program was initiated in 1989 to preserve the range capability against smaller cross-section targets like cruise missiles and low-observable aircraft, and to significantly improve the reliability and maintainability of the aging radar design. We experienced nearly a year's delay in development due to the complexity of the software, but have since surmounted that difficulty. The system is showing good performance in development tests, which are nearly complete, and we expect to begin initial operational

tests this summer.

RSIP has been developed in cooperation with NATO, and the Alliance will apply the similar radar improvements to their fleet of 18 AWACS aircraft. We are now negotiating with NATO for cooperation in the production phase.

Air Force Satellite Control Network Improvement and Modernization (I&M)

The Air Force Satellite Control Network (AFSCN) is the largest, most diverse satellite control network in the world. The modernization is focused on two major areas: Command & Control Upgrades and Communications Upgrades. The main thrust of the upgrades is to eliminate non-standard unsupportable equipment and replace it with less expensive, more capable commercial hardware and software. The modernization will eliminate costly mainframe computers and their expensive software by replacement with a distributed server-workstation architecture in our satellite control centers. The current modernization effort is estimated at $420 M (FY 95-01), and will payoff with estimated savings of $75 M/year beginning in FY 02. Included in the above savings is a reduction of almost 600 government personnel. These modernization efforts also enable additional modernization for unattended remote tracking station operation, which will result in further savings. These efforts were the subject of intense GAO Review during the past year, culminating with support of the AFSCN modernization effort.

The other third of the budget request is for support of accommodating new and changed missions into the network. Additional efforts also support new systems in the classified arena.

Milstar

The Milstar satellite system is planned to provide operational forces -- especially highly mobile tactical units -- with secure, survivable, flexible communications on a world-wide basis. The Milstar system operates in a currently under utilized part of the radio spectrum -- Extremely High Frequency (EHF). This attribute plus other design features, like advanced signal processing and cross links, provide unique mission capabilities -- capabilities required by today's war fighters for power projection into possible theaters of conflict around the globe.

The Department restructured the Milstar program extensively four years ago, at Congressional urging, to reduce costs and to account for changes in the international and national security environments. Requirements for a classified payload were deleted. "Heroic" survivability features envisioned for the Cold War environment were eliminated. The number of satellites and ground control elements were reduced commensurate with the threat and force structure reductions.

A higher capacity, Medium Data Rate or MDR payload is being developed for the second generation Milstar II satellite which expands its tactical utility. This MDR payload will greatly increase communications capacity compared to the Low Data Rate (LDR) capabilities on the initial Milstar I satellites. Use of both LDR and MDR will greatly enhance the utility of Milstar II satellites in a wide range of future scenarios.

The restructured Milstar program also reduced the numbers of strategic terminals and defined new mobile terminals for tactical users. It reduced program life cycle costs by approximately 25 percent. We reviewed the program in 1992 under the context of a DAB for this restructured system and then again in 1993 as a portion of the Bottom-Up Review (BUR). In both reviews we continued to reduce the program and have now arrived at a system design which represents a savings of nearly 50% versus the program defined back in 1991.

The current program, comprised of two Milstar I satellites and four follow-on, Milstar II satellites is the result of extensive analysis during the BUR and retains solid support from all sectors of the DOD. The first Milstar I satellite was launched last year and has undergone initial testing very successfully. We used a planned break in testing to support our forces during Operation Restore Democracy in Haiti. Using prototype terminals we had already procured, the Army forces on the ground were able to talk directly to the deployed command ship and their home base anytime, without any dependence on

terrestrial infrastructure. The satellite is now in final IOT&E.

The second satellite is scheduled for launch later this year and everything looks great at this time. We also completed a very successful critical design review on the MDR package. Finally, we placed the last two Milstar satellites, numbers 5 and 6, on contract.

The Milstar terminal programs are proceeding along as well. The Air Forces command post terminal and the Navy EHF terminal programs were largely unaffected by the changes in the satellite design and have been in production for some years. Installation operations are proceeding smoothly. We revamped the Army terminal program after the Milstar program was redefined, initiating two new efforts following the 1992 DAB: the Single Channel Anti-Jam Man Portable (SCAMP) terminal and the Secure Mobile Anti-Jam, Reliable Tactical Terminal (SMART-T). Through last year both developments were on track and below their program baseline budgets.

Unfortunately, the Army SATCOM Ground Environment budget took a large cut, 50% of its RDT&E, in the FY 95 appropriations bill - a cut aimed squarely at these two efforts. We judged it overly risky to proceed with both development programs on a reduced budget so we had to make a tough choice. The Army worked with industry, the rest of the Milstar team, and OSD to fashion a new strategy that would minimize the effect of the cut. They arrived at a solution that terminated the SCAMP development effort and instead cast it as a competitive production effort. The new strategy retains the previous schedule for terminal production although we've had to accept slightly increased program risks and reduce some of the baseline requirements.

SPACE TRANSPORTATION

Medium Launch Vehicles

The Medium Launch Vehicle (MLV) program is a key to the DOD mission of maintaining assured access to space. This robust mix of expendable launch vehicles, consisting of the Titan II, Delta II, and Atlas II have proven to be dependable workhorses in launching DOD and National User payloads. The Delta II has successfully placed the Global Positioning System (GPS) Block II/IIA satellites into their proper orbits thereby completing the global navigation constellation. Since February 1992, the Atlas II program has successfully launched four Defense Satellite Communications System (DSCS) Block III satellites to maintain our global communications network. In the future, the MLV program will launch the GPS Block IIR satellites, four more DSCS satellites, a Space Test Program satellite, National User payloads, and will continue to support NASA launch operations.

Our strategy is to make only modest investments in these systems for flight safety and to reduce cost where we can realize a near-term savings. We have no plans to refurbish additional Titan II's beyond the original fourteen under contract. At this time we have firm requirements for six of the Titan II's in addition to the five already flown which leaves a balance of three unassigned. We plan to fly out the six by 1999, with two launches planned in fiscal 96 in support of NOAA and DMSP, and then shut down the Titan II operation. Delta and Atlas will continue to be prime launch vehicles through the early part of the next decade until we can transition to the MLV class of the Evolved Expendable launch Vehicle or EELV in 2001.

Titan IV

Until the heavy-lift EELV capability comes on line to support National User payloads after 2005, Titan IV remains this Nation's only capability to place our highest priority, heaviest payloads into polar and geosynchronous orbit.

As a result of a Defense Acquisition Board program review last year, the size of the program was reduced from 65 vehicles to 47. I plan to review the acquisition strategy for the follow-on buy, vehicles 42 and beyond, later this year. The Air Force plans to award a contract for the follow-on program in fiscal year 1997. I believe this additional buy of six vehicles will be adequate to get us through the transition to the heavy-lift version of the EELV, but I would like to preserve the option to add additional

Titan IV vehicles beyond the six planned as a prudent hedge against the EELV schedule. My intent, however, is not to ever have to execute that option. The Air Force plans to award a contract for follow-on launch operations and issue the request for proposal for the follow-on production in FY 1996.

Evolved Expendable Launch Vehicle

The next part of our launch vehicle strategy involves the replacement for the current systems. We have recently issued a draft request for proposal (RFP) for the Evolved Expendable Launch Vehicle or EELV. The number one objective of this program is to reduce cost. This program is one of the recent examples of what we in the Department are doing about acquisition streamlining. I first reviewed the Air Force EELV plan on February 16 and approved their overall concept and directed they prepare for a DAE review. That review is currently scheduled next month. Clearly, not business as usual. The EELV acquisition plan calls for three phases. The first is a 15-month risk reduction phase where we will award multiple contracts to primes. At the end of this phase we will down select to two and enter a 13-month pre-engineering and manufacturing development phase. At the end of that phase we will down select to one and enter the EMD phase. Prior to entry into each of the phases I will hold a DAE review.

As I am sure you are aware, the Secretary was directed to provide two reports to the Congress regarding EELV. One deals with the use of Russian technology and the other a detailed plan describing the proposed development program for the new family of expendable launch vehicles. The Department policy on the use of Russian technology for EELV is currently in coordination within the Department. It is our intent to forward this policy to the Congress within the next few weeks. As reported in the press, the basic tenet of the policy is a "no dependence" clause. We will require that within four years of final contract award, U.S. industry must develop an in-house production capability. This period of time is consistent with the continued production capability of current systems so that we maintain a fall-back if for whatever reason we cannot produce the engines within the US.

The detailed plan describing the EELV program is currently in coordination. I expect it to be forwarded to the Congress soon after the program review next month.

TECHNOLOGY RAMPS

Today's leading edge systems were made possible through decades of investment in fundamental science and exploratory development work. The technology ramps initiated in the early-60's and sustained in the mid-70's gave us the stealth aircraft, precision guided munitions, and night vision systems that provided U.S. forces with a decisive combat edge during the 1991 Gulf War.

The Air Force's F-117 stealth fighter, one of the high-value strike weapons of the war, provides a good illustrative example of the need for stable, long term investment in key enabling defense technologies. The F-117 became operational in 1983 -- in ample time for the Persian Gulf conflict. However, the key enabling technologies for this system can be traced to a mathematical formulation of radar scattering geometries and the development of radar absorbing materials that date back to the early 1960's. During the 1970's, the Department's investment in 6.2 exploratory development produced new titanium alloys, better compressor seals, stealth nozzle designs and many other technologies needed for the Defense Research Projects Agency (DARPA) to build two HAVE BLUE prototypes -- the proof of concept flight demonstration vehicles for what would become the operational F-117 six years later.

To maintain the technological edge of U.S. forces, the Department must continue to establish stable and sustainable technology ramps for tomorrow's systems. The President's FY 1996 budget submission contains $7.6 billion for the Department's 6.1/6.2/6.3 S&T programs (excludes BMDO S&T programs). Although the FY 1996 amount is about $800 million or about 10% less than the FY 1995 appropriated level, it returns the Department's investment in S&T to a more sustainable real growth profile over the long term -- one more consistent with the historical norms established over the past 30 years. Budget authority for science and technology in FY 2001 is projected to be 18 percent higher, in then year dollars, than in FY 1996.

TECHNOLOGY PROGRAM

The Director of Defense Research & Engineering (DDR&E) is responsible for overseeing both the content and execution of the Defense S&T Program. Over the past year, the DDR&E developed and published the *Defense Science and Technology Strategy* and the *Defense Technology Plan* in conjunction with the Military Departments and Defense Agencies. Together, these companion documents provide a single integrated summary of the Department's overall S&T vision, strategy and program content.

In turn, each of the Military Departments and Defense Agencies organize and manage the execution of their individual S&T programs within this overarching framework. The resulting diversity in management approaches provides a robust capability and alternate methods for tackling emergent issues. All of these organizations, under the leadership of the DDR&E, work closely together to:

- establish technology "on-ramps" that are responsive to the warfighter's needs;
- review soundness of technical and programmatic approaches;
- coordinate allocation of resources;
- prevent duplication and overlap;
- execute an integrated, comprehensive program;
- guard against technological surprise.

The Department's technology "on-ramps" are a collection of individual technology programs in research categories 6.1/6.2 (basic research/exploratory development) and 6.3 (advanced development). These efforts are linked in a technology insertion road map to specific weapon system acquisition programs, either a new start or system upgrade, to satisfy the warfighter's stated mission needs. For example, the next generation of air-to-air missiles is supported by a broad range of Air Force, Army and Navy research category 6.2 exploratory development projects to develop improved seeker, warhead, fuzing and solid rocket motor component technologies. The path for insertion of these new technologies in an improved Advanced Medium Range Air-to-Air Missile (AMRAAM) is through a research category 6.3 advanced development program, typically an Advanced Technology Demonstration (ATD), to prove the feasibility and military utility of the approach selected.

The Department has established a new mechanism in research category 6.3, called an Advanced Concept Technology Demonstration (ACTD), to rapidly transfer technology to the users. ACTDs are user-oriented, even user-dominated. An ACTD is an integrating effort to assemble and demonstrate a significant, new military capability. It is based upon mature advanced technologies -- at a scale size adequate to establish operational utility and system integrity. The demonstration is jointly implemented with the operational user and materiel development communities as key participants. ACTDs allow the war fighting user to:

- evaluate the military utility of the technology before committing to a major acquisition effort;
- develop concepts of operation for employment of the new technology;
- retain a low-cost residual operational capability.

Military needs drive the direction and resource allocation priorities of the Department's S&T program. The Joint Staff and the JROC have identified five "Future Joint War fighting Capabilities" most needed by the U.S. Combatant Commands for coping with the post-Cold War world. These five future war fighting needs are:

- *To maintain near perfect real-time knowledge of the enemy and communicate that to all forces in near-real time.* War fighters need to know where the enemy is, what their capabilities are, where

friendly forces are, and what range of actions each could execute. In addition, war fighters need timely information and intelligence products. Specifically, they require near-real time updates on meteorological, topographical, geographical, and political conditions. The Department's S&T program is emphasizing several promising advanced technology areas to achieve dominant battlefield awareness and action cycle times. Important technological advances are being pursued in: information surveillance, information management, and intelligence dissemination. The current family of Unmanned Airborne Vehicle (UAV) ACTDs is the 6.3 portion of a "technology ramp" aimed at improved airborne surveillance and reconnaissance capabilities. Three candidate FY 1995-1996 ACTD new starts are looking at innovative ways to decrease the action cycle time of U.S. forces by addressing the growing need to process, fuse, and then disseminate intelligence: (1) Semi-Automated Imagery Intelligence (IMINT) Processing; (2) Ground-Ground and Air-Ground Combat Identification; and (3) Battlefield Awareness and Data Dissemination.

- *To engage regional forces promptly in decisive combat, on a global basis.* Prompt reaction to regional conflicts has two components: global mobility and decisive combat. Technological advances in aircraft propulsion have dramatically improved the performance of Air Force "global reach -- global power" forces. The Department's 6.2/6.3 Integrated High Performance Turbine Engine Technology (IHPTET) program, budgeted at $134 million in FY 1996, is aimed at providing a 100% improvement (over the 1987 baseline) in the thrust/weight ratio of high performance fighter engines by 2003. Substantial strides are being made in the Department's 6.2 exploratory development programs to reduce the weight of "heavy" Army and Marine forces so they can be sea deployable in half the time with half the ships.

- *To employ a range of capabilities more suitable to actions at the lower end of the full range of military operations which allow achievement of military objectives with minimum casualties and collateral damage.* The principal challenge is to limit casualties and collateral damage. Advances in precision targeting and controlled destruction, particularly in settings where enemy combatants mingle with civilians, are required to limit collateral damage and casualties. The Marine Corps, Army and several CINCs are sponsoring a candidate FY 1995-1996 ACTD new start on Military Operations in Built-Up Areas. This ACTD will serve as an integrating effort to demonstrate new operational capabilities in urban settings using mature and emerging technologies from the Department's portfolio of 6.2 projects on non-lethal weapons, surveillance, sensing, target detection and situational awareness.

- *To control the use of space.* Desert Storm was the first space war. Space based systems provided coalition forces with communications, navigation, weather monitoring, threat warning, intelligence collection, and a decisive advantage in situational awareness. Technological advancements are required to insure space based communications links are jam resistant. Without assured access to and control of space, that advantage is lost. The Department has embarked on a wide range of space vehicle and booster 6.2/6.3 development efforts. The Air Force has budgeted $30 million in FY 1996 to reduce the size and weight of the Extremely High Frequency (EHF) payload on board Milstar communications satellites. Current projections indicate that replenishment of the Milstar constellation with a considerably less costly Medium Launch Vehicle (MLV)-class Advanced EHF satellite is possible by 2006.

- *To counter the threat of weapons of mass destruction and future ballistic and cruise missiles to the CONUS and deployed forces.* Weapons of mass destruction, theater ballistic missiles, and anti-ship cruise missiles present a wide range of serious threats to U.S. forces. Technological advances are needed to allow for the better detection of and defense against biological agents. The Ballistic Missile Defense Organization has a robust ballistic missile defense technology program in place to counter validated threats. The Navy is sponsoring a "Mountain Top" ACTD to demonstrate over-the-horizon detection, tracking and engagement of cruise missiles from an elevated sensor suite. A candidate FY 1995-1996 ACTD new start on Counter Proliferation will demonstrate an improved counter force capability to survey and strike weapons of mass destruction (WMD) storage and production facilities, including the planning tools for predicting collateral damage and performing bomb damage assessments.

SUMMARY

Mr. Chairman, every weapon system in the U.S. inventory today required decades of direct investment in critical enabling technologies; creation of suitable "technology ramps;" and sustainment of a coherent modernization program. These systems exist because of the technologies and concepts developed by teams of dedicated researchers at our universities, defense laboratories, test centers and industrial contractors. The DOD is committed to maintaining a legacy of technological supremacy at an affordable cost.

The Department's FY 1996 budget submission contains a prudent and relevant mix of defense research, development, test and evaluation investments. This program is needed to produce tomorrow's weapon systems. It initiates the Department's long term modernization strategy; meets the national security needs of the nation; and preserves a legacy of technological superiority for U.S. forces in the 21st Century.

I thank you for this opportunity to appear before the Subcommittee and shall be happy to answer any questions you may have.